NORTHEAST DELTA RC&D AREA, INC.
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FINAL REPORT

The Tensas Watershed Agricultural NPS Demonstration and Education Project
Contract Number: 522969

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CONTRACTOR: **Northeast Delta RC&D Area, Inc.**
PROJECT NAME: **The Tensas Watershed Agricultural NPS Demonstration and Education Project**
Contract Number: **522969**

The primary goal of this demonstration project was to implement both agricultural best management practices and erosion control structures in specified locations along the Tensas River. These conservation practices were implemented to reduce the level of sediments, nutrients, and pesticides entering the Tensas River, its tributaries, field drains, and other water bodies of the basin. The following objectives were utilized to achieve the project goal:

1. Demonstrate the method and effectiveness of best management practices in reducing agricultural related nonpoint source pollution to local land users and residents.
2. Increase public awareness of nonpoint source pollution prevention practices and encourage the land users to implement voluntary conservation practices to reduce or prevent nonpoint pollution at the source.
3. Reduce stream bank erosion along the Tensas River through the installation of water and sediment control structures at the mouth of field drains discharging directly into the Tensas River.

Task and Deliverables

Program Element 1: Selection of site for Demonstration Projects
Objective: To demonstrate the selected Best Management Practices (BMP's) at a location where other farmers within the basin can see what is being recommended as one solution to reducing the sediment and nutrients which enter the Tensas River from agricultural fields.

Deliverables: A map of the watershed with the farmers located, who have agreed to participate in the BMP demonstration project.

Location of the 10 Demonstration Sites:

Jay Hardwick Site #1: Sec. 16, T14N, R12E
Lat. 032 13' 16.33" N
Long. 091 16' 37.58" W
Elevation 19 meters
Tensas Parish, Louisiana

Site #1 is located approximately 1 mile west of US Hwy 65 and approximately 1 & 1.25 miles north of LA. 888. This structure is installed at the mouth of a field drain where it discharges directly into Mill Bayou. Mill Bayou discharges into the Tensas River approximately 1 mile downstream.

Jay Hardwick Site #2: Sec. 16, T14N, R12E
Lat. 032 12' 11.4" N
Long. 091 17' 37.84" W
Elevation 18 meters
Tensas Parish, Louisiana

Site #2 is located approximately mile west of US Hwy 65 and approximately 1 mile north of LA. 888. This structure is installed at the mouth of a field drain where it discharges directly into Mill Bayou. Mill Bayou discharges into the Tensas River approximately .75 mile downstream.

Jay Hardwick Site #3: Sec. 16, T14N, R12E
Lat. 032 11' 27.32" N
Long. 091 14' 32.67" W
Elevation 22 meters
Tensas Parish, Louisiana.

Site #3 is located approximately .25 mile west of US Hwy 65 and approximately .333 mile north of LA. 888. This structure is installed in a field drain that discharges into Mill Bayou. Mill Bayou discharges into the Tensas River approximately 2 miles downstream.

Jay Hardwick Site #4: Sec. 16, T14N, R12E
Lat. 032 13' 33.34" N
Long. 091 16' 27.22" W
Elevation 20 meters
Tensas Parish, Louisiana.

Site #4 is located approximately 1.25 miles west of US Hwy 65 and approximately .5 miles north of LA. 888. This structure is installed in a sump area on the farm and allows for water management prior to discharging into Mill Bayou.

Jay Hardwick Site #5: Sec. 16, T14N, R12E
Lat. 032 13' 7.57" N
Long. 091 16' 47.32" W
Elevation 19 meters
Tensas Parish, Louisiana

Site #5 is located approximately 1 mile west of US Hwy 65 and approximately .75 mile north of La. 888. This structure is installed into a large field drain that was experiencing severe soil loss problems. This field drain discharges into Mill Bayou approximately 1 mile upstream from the Tensas River.

Bill Windham Site #6: Irregular Sec. 42 T15N, R1E
Lat. 032 15' 36.30" N
Long. 091 08' 39.54" W
Elevation 22 meters
Madison Parish, Louisiana

Site #6 is located approximately .25 miles east of Parish Road 605. This structure is installed in a natural sump area prior to discharging into Roundaway Bayou.

Bill Windham Site #7: Irregular Sec. 42, T15N, R1E
Lat. 032 14' 48.73" N
Long. 091 04 34.77" W
Elevation 22 meters
Madison Parish. Louisiana

Site #7 is located approximately 100 meters north / northwest of the mainline levee of the Mississippi River. This structure is installed in a natural sump area prior to discharging into Willow Slough.

Bill Windham Site #8: Irregular Sec. 42, T15N, R1E
Lat. 032 14' 59.53" N
Long. 091 04' 22.57" W
Elevation 22 meters
Madison Parish, Louisiana

Site #8 is located in the mouth of a field drain that discharges into Harper Bayou.

Ricky Arledge Site #9: Sec. 4, T9N, R11E
Lat. 032 39" 17.81" N
Long. 091 20' 52.10" W
Elevation 22 meters
East Carroll, Louisiana

Site #9 is located approximately 1.333 miles west of La. 134. This structure is installed in a natural sump area prior to discharging into Joes Bayou.

Charles Tate Site #10: Sec. 36, T9N, R11E
Lat. 032 39' 17.81" N
Long. 091 17' 44.50" W
Elevation 22 meters
East Carroll, Louisiana

Site #10 is located in the mouth of a field drain that discharges directly into the Tensas River.

Program Element 2: Implementation of BMP's at the demonstration project site
Objective: To implement sufficient erosion control and agricultural best management practices in the demonstration area, to detect a reduced pollutant load and predict water quality improvements when the practices have been implemented.

Re-establish filter strip conservation practices along field drains. Three thousand feet of filter strips along the field drains will be established and agricultural BMP's will be implemented to reduce sediment, nutrients, and pesticides from entering the Tensas River.

Demonstrate the effectiveness of drop pipes and water and sediment control structures in reducing stream bank and on-farm soil erosion. Ten pipedrops will be installed along stream banks.

Demonstration Site #1:
Mr. Hardwick established approximately 500 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 300-acre demonstration site.

1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #2
Mr. Hardwick established approximately 700 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 400-acre demonstration site.

1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #3
Mr. Hardwick established approximately 400 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 200-acre demonstration site.

1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management

5. Winter cover crop
6. Record keeping

Demonstration Site #4
Mr. Hardwick established approximately 1200 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 450-acre demonstration site.
1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #5
Mr. Hardwick established approximately 300 feet of filter strips along the field drains. Mr. Hardwick also implemented the following BMP's on this 150-acre demonstration project.
1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #6
Mr. Windham established approximately 200 feet of filter strips along the field drain. Mr. Windham also implemented the following BMP's on this 100-acre demonstration site.
1. Seasonal residue management
2. Integrated nutrient management
3. Integrated pest management
4. Record keeping

Demonstration Site #7
Mr. Windham implemented the following BMP's on this 70-acre demonstration project.
1. Integrated nutrient management
2. Winter cover crop
3. Winter water management
4. Record keeping

Demonstration Site #8
Mr. Windham implemented the following BMP's on this 30-acre demonstration site.
1. Integrated nutrient management

2. Winter water management
3. Record keeping

Demonstration Site #9
Mr. Arledge established approximately 200 feet of filter strips along the field drain. Mr. Arledge also implemented the following BMP's on this 80-acre demonstration site.
1. Seasonal residue management
2. Integrated nutrient management
3. Record keeping

Demonstration Site #10
Mr. Tate implemented the following BMP's on this 120-acre demonstration site.
1. Seasonal residue management
2. Integrated nutrient management
3. Integrated pest management
4. Record keeping

Program Element 3: Implement an educational outreach program for the demonstration project (Public Participation Element)

Objective: To implement an educational outreach program, which encourages other farmers within the Tensas River Watershed, to implement the BMP's which have been demonstrated.

Deliverable: Slides, photographs, and video documentation of the educational events that are held within the Tensas River Watershed project area as well as draft and final copies of fact sheets or educational materials which are developed for these educational events.

Three field days were held at the demonstration sites to inform area land users and residents about nonpoint source pollution problems and nonpoint source pollution prevention BMP's.

Benefits of implementing on-farm and stream bank BMP's were incorporated into the training curriculum for Wild Woods Wandering.

Program Element 4: Presentation of results of project to drainage board.

Objective: To educate the local drainage board that one solution to improved water quality is consistent with their goals of improved carrying capacity of the Tensas River, and that by working with local landowners on implementation of agricultural BMP's, that sediment loads can be reduced, thereby reducing silt bar formation and vegetation along the banks of the Tensas River.

Northeast Delta RC&D's Tensas River Basin Coordinator met with the Fifth Louisiana District Levee Board (local drainage board) twice during this demonstration project. The coordinator met with the Levee Board at the beginning of the project and described the advantages of implementing on-farm and stream bank BMP's. The Coordinator assured the Levee Board that the goals of this demonstration project were consistent with their goals of improved carrying capacity of the Tensas River. The Coordinator also met with the Levee Board toward the end of the project and updated them on the implementation progress of the demonstration project.

RUSLE CALCULATIONS FOR GULLIES

Site #1:
Gully 8' deep x 12' top width plus 8' bottom width x 6' per year x .05 (Soil Type Lbs/FT3)
24 Tons of Soil Saved after structure installed

Site #2:
Gully 12' deep x 16' top width plus 12' bottom width x 6' per year x .0475 (Soil Type Lbs/FT3)
48.4 Tons of Soil Saved after structure installed

Site #3:
Gully 9' deep x 20' top width plus 16' bottom width x 10' per year x .0475 (Soil Type Lbs/FT3)
77.8 Tons of Soil Saved after structure installed

Site #4:
Gully 5' deep x 14' top width plus 10' bottom width x 12' per year x .0475 (Soil Type Lbs/FT3)
24 Tons of Soil Saved after structure installed

Site #5:
Gully 10' deep x 20' top width plus 14' bottom width x 12' per year x .0475 (Soil Type Lbs/FT3)
97.9 Tons of Soil Saved after structure installed

Site #6:
Gully 3' deep x 6' top width plus 4' bottom width x 3' per year x .05 (Soil Type Lbs/FT3)
2.25 Tons of Soil Saved after structure installed

Site #7:
Gully 2' deep x 10' top width plus 8' bottom width x 5' per year x .0475 (Soil Type Lbs/FT3)
4.28 Tons of Soil Saved after structure installed

Site #8:
Gully 4' deep x 12' top width plus 8' bottom width x 8' per year x .0475 (Soil Type Lbs/FT3)
15.36 Tons of Soil Saved after structure installed

Site #9:
Gully 1.5' deep x 4' top width plus 1' bottom width x 2' per year x .0475 (Soil Type Lbs/FT3)
97.9 Tons of Soil Saved after structure installed

Site #10:
Gully 3' deep x 10' top width plus 1' bottom width x ' per year x .0475 (Soil Type Lbs/FT3)
3.9 Tons of Soil Saved after structure installed

RUSLE CALCULATIONS FOR CROPPING SYSTEM

Demonstration Site #1:
Cropping System
Before:
Fall Disk and hip, plant in spring on stale seedbed cultivation for weed control

After:
Mr. Hardwick established approximately 500 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 300-acre demonstration site.

1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #2
Cropping System
Before:
Fall Disk and hip, plant in spring on stale seedbed cultivation for weed control

After:
Mr. Hardwick established approximately 700 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 400-acre demonstration site.

1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #3
Cropping System
Before:
Fall Disk and hip, plant in spring on stale seedbed cultivation for weed control

After:
Mr. Hardwick established approximately 400 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 200-acre demonstration site.

1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management

5. Winter cover crop
6. Record keeping

Demonstration Site #4
Cropping System
Before:
Fall Disk and hip, plant in spring on stale seedbed cultivation for weed control

After
Mr. Hardwick established approximately 1200 feet of filter strips along the field drain. Mr. Hardwick also implemented the following BMP's on this 450-acre demonstration site.
1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #5
Cropping System
Before:
Fall Disk and hip, plant in spring on stale seedbed cultivation for weed control

After:
Mr. Hardwick established approximately 300 feet of filter strips along the field drains. Mr. Hardwick also implemented the following BMP's on this 150-acre demonstration project.
1. Conservation cropping rotation
2. No-till residue management
3. Integrated nutrient management
4. Integrated pest management
5. Winter cover crop
6. Record keeping

Demonstration Site #6
Cropping System
Before:
Fall Conventional planting, fall disk, subsoil and hip, spring hip and do-all, cultivation for weed control.

After:
Mr. Windham established approximately 200 feet of filter strips along the field drain. Mr. Windham also implemented the following BMP's on this 100-acre demonstration site.
1. Seasonal residue management
2. Integrated nutrient management
3. Integrated pest management
4. Record keeping

Demonstration Site #7
Cropping System
Before:
Fall Conventional planting, fall disk, subsoil and hip, spring hip and do-all, cultivation for weed control.

After:
Mr. Windham implemented the following BMP's on this 70-acre demonstration project.
1. Integrated nutrient management
2. Winter cover crop
3. Winter water management
4. Record keeping

Demonstration Site #8
Cropping System
Before:
Fall Conventional planting, fall disk, subsoil and hip, spring hip and do-all, cultivation for weed control.

After:
Mr. Windham implemented the following BMP's on this 30-acre demonstration site.
1. Integrated nutrient management
2. Winter water management
3. Record keeping

Demonstration Site #9
Cropping System
Before:
Conventional planting on prepared seedbed, disked and chiseled in the fall, cultivation for weed control.

After:
Mr. Arledge established approximately 200 feet of filter strips along the field drain. Mr. Arledge also implemented the following BMP's on this 80-acre demonstration site.
1. Seasonal residue management
2. Integrated nutrient management
3. Record keeping

Demonstration Site #10
Cropping System
Before:
Conventional planting on prepared seedbed, disked and chiseled in the fall, cultivation for weed control

After:
Mr. Tate implemented the following BMP's on this 120-acre demonstration site.
1. Seasonal residue management
2. Integrated nutrient management
3. Integrated pest management
4. Record keeping

RUSLE CALCULATION														
Site	Acres	K-T	Slope Length		Slope %	P		Crop System		RKLSP	Soil Loss Before		Soil Loss After	
			B	A		B	A	B	A		Tn/Ac/Yr	Tn/Yr	Tn/Ac/Yr	Tn/Tr
1	300	.32-5	300	300	.5	-	-	.347	.015	12	4	1200	.1	30
2	400	.32-5	200	200	.2	-	-	.298	.030	7	2	800	.2	80
3	200	.32-5	200	200	.2	-	-	.298	.030	7	2	400	.2	40
4	450	.32-5	150	150	.15	-	-	.298	.015	7	2	900	.1	45
5	150	.32-5	200	200	.2	-	-	.298	.030	7	2	300	.2	30
6	100	.32-5	100	100	.2	-	-	.470	.118	7	3	300	.8	80
7	70	.32-5	150	150	.2	-	-	.470	.118	7	3	210	.8	56
8	30	.32-5	100	100	.5	-	-	.470	.118	12	6	180	1.4	42
9	80	.32-5	200	200	.3	-	-	.485	.181	9	4	320	1.6	128
10	120	.32-5	200	200	.4	-	-	.485	.181	8	4	960	1.5	180

Mr. Jay Hardwick explaining benefits of implementing steambank and on-farm best management practices.

Streambank erosion prior to the installation of a water control structure (pipedrop).

Cotton growing in winter wheat stubble at Hardwick Demonstration Site. Winter Wheat was planted as a cover crop.

No-till wheat cover crop-crop residue management

No-till wheat-Cover Crop
Residue Management

Filter Strap
Note: The tire tracks through the sediment trapped by grass filter (Sediment approximately 6" deep).

Streambank erosion prior to installing pipedrop at Hardwick Demonstration Site

Jay Hardwick explaining the benefits of pipedrops-before installing the structure.
Note: Streambank erosion prior to discharging into Mill Bayou.

Jay Hardwick explaining the benefits of the demonstration project to visitors from the Gulf of Mexico Program.

Grassed Waterway Note: Clarity of water

Mr. Bill Windham hosting field tour.

Eroded sites prior to installing pipedrop

Off-loading Structures at Hardwick's Farm.

Hardwick Site #1 Prior to installing Structure.

Hardwick Site #1 After installing structure (facing downstream).

Hardwick Site #2 Prior to installing structure.

Hardwick Site #2 Installing structures

Site #2 Grassed Waterway

Hardwick Site #3 Before installing structure

Preparing to install structure at Site #3

Hardwick Site #3 Installing structure

Hardwick Site #4 Prior to installing pipedrop

Hardwick Site #4 Installing pipedrop

Hardwick Site #5 Winter Water Management

Windham Site #6 Installing the structure

Windham Site #7 Prior to installation

Windham Site #8 Winter Water Management

Arledge Site #9

Arledge Site #9 Note: The seasonal residue management and winter water management implemented

Tate Site #10 Streambank erosion on Tensas River prior to installing water and sediment control structure

Tate Site #10

Tate Site #10 After installing water and sediment control structure

IT'S YOUR TOPSOIL **IT'S YOUR WATER** **IT'S YOUR WILDLIFE**



REDUCE SOIL EROSION AND SEDIMENTATION, IMPROVE WATER QUALITY, ENHANCE WILDLIFE HABITAT, AND REDUCE FLOODING

All crops in the Tensas River Basin are grown in the top few inches of topsoil. Topsoil contains organic matter, nutrients, and micro-organisms needed to support healthy plants. If topsoil is being lost from your farm, you are losing the ability to maximize the productivity of your land.

Head-cutting or erosion along the waterways in the Tensas increases the amount of sediment that is deposited in the waterways. This deposition of sediment reduces the carrying capacity of the drainage areas, which increases the flooding potential. Sediment in the waterways also degrades wildlife habitat (primarily fisheries) and the quality of the water in the waterways.

You can help protect and conserve valuable farmland for future generations by implementing the following Best Management Practices (BMP's):

Seasonal Residue Management, Integrated Nutrient management, Winter Water Management, Integrated Pest Management Conservation Cropping Rotation, No-Till Residue Management, Winter Cover Crop, and Water Control Structures

The following programs provide landowners technical and /or financial assistance to implement the BMP's:

ENVIRONMETAL QUALITY INCENTIVES PROGRAM
CONSERVATION RESERVE PROGRAM
CONSERVATION OF PRIVATE GRAZING PROGRAM
FARMLAND PROTECTION PROGRAM
WETLAND RESERVE PROGRAM
WILDLIFE HABITAT INCENTIVES PROGRAM
CONSERVATION SECURITY PROGRAM

We all need clean water, reduced flooding and the ability to maximize crop production from our limited topsoil.

"Productive Soil is life and productive soil is vanishing with each passing year"

"Take care of the land and the land will take care of you"

Hugh Hammond Bennett, 1947

"Out of the long list of nature's gifts to man, none is perhaps so utterly essential to human life as soil."

"A prosperous and enduring agriculture depends on an adequate supply of productive land, properly used and so protected from erosion that it will remain permanently productive."

For more information:
Contact Northeast Delta RC&D Area at (318) 435-7328 or your local USDA-NRCS Office.